AINA staff members Donald A. Frey and Robin Piercy visited Mombasa, Kenya, in January, 1976, to investigate a wreck site thought to be of a Portuguese ship which sank in 1697. Under the auspices of the Fort Jesus Museum, Mombasa, the work was made possible by a grant from the National Geographic Society. The author and Dr. Frey also wish to thank the following for their generous help and hospitality: National Museums of Kenya; Provincial Commissioner Coast, Mr. Eliud Mahihu; Mombasa Club; Bahari Club; Divecon, Neville Chittick; Alan Alder; Tony Dunne; Kevin Patience; Car and General Ltd.; the 1971 survey team for permission to reproduce in part their survey plan; and Mr. James Kirkman.

Through the good offices of Dr. E.T. Hall, Research Laboratory for Archaeology, Oxford, Dr. Frey was able to spend several days at the Oxford Computer Center. In 1971, he developed a computer program at Oxford to analyze magnetometer data from archaeological land sites. This was adapted to accept underwater data and produced the overall picture of magnetic disturbances on the Mombasa site, as shown in Fig. 5.

Mr. Piercy has prepared the following report for AINA members.

Kenya, 1697

Hamo Sassoon, Curator of the Fort Jesus Museum, met Don and me when the overnight train from Nairobi pulled into the Mombasa train station. The train is a splendid relic of East African colonial travel, with plush leather seats and white-coated attendants. Hamo took us to the Mombasa Club, which was to become our headquarters for the next 20 days. This was very convenient, as the Club overlooks the site and is adjacent to Fort Jesus.

Mombasa is a thriving commercial center, with a natural deep water harbor, protected by treacherous coral reefs at its narrow mouth. As I write, there are two modern freighters stuck fast on the reefs, awaiting salvage. The harbor is divided in two by a large island on which the bulk of the town lies; to the south is the new commercial port, and to the north, the old dhow harbor. The latter is still used by local sailing traders, and, in the spring of each year, by the dhows of Arabia. During our visit we were fortunate to see several of these magnificent craft beating up the narrow creek under full sail. Like much in the world, tradition has given way to progress, and many dhows are now powered by huge diesel engines. They no longer need to rely on monsoon winds to blow them on their trade routes.

Kenya, 1976

Fort Jesus was built by the Portuguese in the late 16th century to secure their trade routes to the east. It sits on a low cliff overlooking the confluence of the two harbor creeks and guards the narrow harbor entrance. It was here, in 1697, that the Santo Antonio de Tanna, an armed merchant ship from Portuguese Goa in India, sailed in response to a request for assistance sent by the beleaguered garrison defending the Fort against an Arab siege.

The Fort, in desperate straits and almost totally reduced in numbers by
wooden hull lying in about 15 meters of
to the north of the Fort. Further
investigations, with local volunteers,
showed that the site could be that of
the Santo Antonio de Tanna (see James
Kirkman, "A Portuguese wreck off
Mombasa, Kenya." International Journal
of Nautical Archaeology, Vol. 1, 1972,
pp. 153-157). Certainly the material
recovered indicated a ship of Portuguese
origin. The finds included a brass
breach-loading cannon with insignia,
grenades, salt glaze ware, some very fine
Chinese porcelain, and Siamese black
glaze jars. These are now on display in
the Museum. Our evaluation of the site
was greatly helped by Plough's and
Phillips's careful recording and also by
their nylon base line, still intact on the
bottom. During our stay we spoke with
many of the original volunteers and
were very encouraged by their ready
offers of assistance.

At high water the deepest and shal-
lowest points on the wreck were
recorded as 20 m. and 12 m. respect-
ively. The water temperature of the
Indian Ocean, just south of the equator,
is always warm. Wet suits were necessary
only as protection against accidental
contact with sharp coral and the poison-
ous spines of stone fish. Consequently,
we were able to spend a considerable
time on the bottom.

Preliminary work on the site con-
isted of laying down five additional
nylon lines parallel to the original base
line. These were set at 3 meter centers
and had 21 bunttings tied at 2 meter
intervals along their length. Thus we had
effectively gridded an area 15 x 44
meters into 2 x 3 meter rectangles. (See
Fig. 4: the small vertical numbers on the
right side indicate the grid lines, with 4
being the original base line.) We had
hoped to cover the site photographically
with at least one 2 x 3 meter grid
rectangle per exposure. This would have
ensured good coverage and overlap for a
simple photo-mosaic. But after several
attempts at all stages of the tide, we
were foiled by the unpredictable visi-
bility. The nylon grid lines, however,
proved invaluable in orienting ourselves
in these poor conditions. We found
visibility was best on the rising tide an
hour before, and during, high water.

With the approach of spring tide, clarity
increased enormously, reaching an esti-
mated 10 m. on one occasion.

A plan of the site, made in 1971, is
the basis for the plan produced in
Figure 4. Two distinct rows of massive
frames curving toward each other could
be followed along the silty sea bed. By
projecting the curves on paper, it was
possible to estimate the ship to be
approximately 38 m. in length, with a
beam of 8 m. Unfortunately it was not
possible to verify this due to the ab-
sence of any recognizable stem or stern
posts. Careful visual inspection indicated
that there is probably no more than the
lower 1.5 m. of hull remaining. This is
covered by sand and fine broken coral
and appears to be well preserved. Hull
strakes 10 cm. thick are fastened to
frames 22 cm. square, set solidly side by
side, with no space between the frames;
these in turn are covered by ceiling
planks 4 cm. thick and 22 cm. in width.
According to a previous analysis, the
timber used in the construction is pre-
dominantly teak.

In the course of our survey, we
opened a number of small trial trenches
in selected areas. These, in addition to
those of previous years, indicate that
below the thin silt overburden there
may lie many well preserved objects.
Amidships we uncovered a layer of
ballast stones nearly one meter thick.
The extent of this layer was not deter-
mimed, but it is conceivable that it
covers a great proportion of the ship's
bilge.

As our investigations continued, it
became evident that because the hull lay
on a steep slope, much of the upper-
works and associated material would
have fallen outwards down the hill.
Heavy objects such as cannon would
have been among the first to have
broken free and fallen through weak-
ened bulwarks. Because of their weight,
they would have been quickly and
deeply buried in the silt.

Looking for Metal

In the course of discussions with
Divecon, a local diving company, ar-
rangements were made for the hire of
their Elsec metal detector. This proved

Fig. 2. Trader from Lamu beats up the creek.

plague, was resupplied in September,
1697, by the Santo Antonio. The ship,
according to Portuguese records, was
moored directly below the Fort and
endured heavy fire from enemy bat-
taries. Because of the danger, an unsuccess-
ful attempt was made to change her
moorings. But in September her cables
parted and the ship became stranded on
the northeast reef, losing her rudder in
process. She later refloated and was
moored again close to the Fort. At some
time after October 20, she finally sank.
As yet we know nothing of the circum-
stances of her sinking. We do know,
however, that the crew of the ill-fated
ship joined the defending garrison in the
Fort. They gallantly held out for nearly
a year before being forced to surrender,
overcome by sickness rather than the
attackers' military genius.

Diving on the Wreck

In the late 1960's, two local divers,
Conway Plough and Peter Phillips sepa-
rately discovered the remains of a
wooden hull lying in about 15 meters of
plague, was resupplied in September,
Fig. 3a. Iron hand grenade with wooden peg.

Fig. 3b. K’ang-hsi porcelain plate.

Fig. 3c. Portuguese plate with Maltese cross.

Fig. 3d. Bronze cannon with arms of Portugal and date 1678.

Fig. 3e. Kalong (Siamese) jar, 54 cm. high.
Looking Ahead

While no stratified evidence was found to prove beyond doubt that the wreck was the Portuguese Santo Antonio de Tanna, the information we collected strongly reinforces that possible identification. Teak was plentiful in India and often used in shipbuilding. The solid construction and size of the hull are similar to merchant ships of that period, armed with 40 guns. The lack of cannon on board can be explained by the ship’s having sunk rather slowly, and there having been time to remove them. They would have been more than useful in the defense of the beleaguered Fort.

Little is known of early Portuguese shipboard life in the Indian Ocean, and excavation will shed light on that subject. Many interesting objects can be anticipated, and it is likely that a thorough investigation of the hull will prove to be of great interest. The good condition of the wood beneath the sand should yield considerable information about the techniques of Portuguese ship construction of the period. In the past, AINA staff members have been able to produce ships’ lines and reconstructed
Fig. 5.
Magnetic contour map showing disturbances (X, Y, and Z) large enough to be buried cannon or a mass of iron shot. All gamma contours should be multiplied by 10.

Hulls from considerably less evidence than that preserved by the Mombasa wreck (see AINA Newsletter, Vol. 1, No. 2, “New Lines of the Yassi Ada Byzantine Ship”).

The discovery of this ship, the earliest known preserved wreck on the East African coast, has raised a good deal of local interest. At this time, plans are going ahead for AINA staff to direct an excavation early in 1977. We look forward eagerly to our return to Mombasa and our many new friends there, in particular Mr. and Mrs. Hamo Sassoon and Conway Plough, who gave us so much of their time.

— Robin C. M. Piercy
The American Institute of Nautical Archaeology is a nonprofit scientific/educational organization whose purpose is to gather knowledge of man's past as left in the physical remains of his maritime activities and to disseminate this knowledge through scientific and popular publications, seminars, and lectures. The AINA Newsletter is published periodically by AINA and is distributed to its members and Supporting Institutions to inform them of AINA's current activities.

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